Roswell Municipal Water System

Source Water Protection Plan

Final Draft

April 2019

Roswell Municipal Water System

#NM3520203

SOURCE WATER PROTECTION PLAN

Final Draft 4/12/2019

This plan was prepared by:

New Mexico Environment Department, Drinking Water Bureau, Source Water Protection Program

in cooperation with

Roswell Municipal Water System staff, board, and community stakeholders

In follow-up to the development of the

2018 City of Roswell Source Water Assessment

CONTACTS & RESOURCES
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New Mexico Environment Department – Drinking Water Bureau – Source Water Jill Turner, Source Water Protection Program Manager / 505-476-8623 / jill.turner@state.nm.us https://www.env.nm.gov/drinking_water/source-water-protection/

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Executive Summary

The City of Roswell is dedicated to protecting the quantity and quality of drinking water for the Roswell community. Through this Source Water Protection Plan, the City is using the assessment of its water sources to develop action items and priorities that will help sustain drinking water supplies for current and future generations.

An initial source water assessment was conducted by the New Mexico Environment Department (NMED) in 2004. In 2018, the City of Roswell worked with NMED and their contractor Daniel B. Stephens & Associates to complete an updated, in-depth assessment of existing and potential threats to the Roswell Municipal Water System's supply. The assessment includes a review of the water system's facility, water production, source water hydrogeology, water quality, source water area, and a susceptibility analysis. The source water area was defined for each of the system's 20 groundwater wells using a fixed-radius method. Within these areas, existing and potential sources of contamination were identified and assessed for the level of risk they pose to the water supply.

This source water protection plan provides a summary of the 2018 assessment, descriptions of identified source water impacts, and a table of actions items to be implemented by the City. The susceptibility ranking for each well is derived from a calculated sensitivity score (based on the well's infrastructure and sensitivity of the aquifer) and a calculated vulnerability score (based on the likelihood and impact of well contamination and a count of existing or potential sources of contamination). Susceptibility rankings for the City wells reveal 6 wells with Moderately Low susceptibility, 4 wells with Moderate susceptibility, 7 wells with Moderately High susceptibility, and 3 wells with High susceptibility.

The primary risks to the water supply come from the following types of existing contamination sources: leaking underground petroleum storage tanks, the former Walker Air Force Base contamination plume, the Lea & W. Second Street Superfund Site, and the McGaffey & Main Superfund Site. Lower risks to the water supply come from these types of potential sources of contamination: aboveground and underground petroleum storage tanks (not leaking), agricultural fields, arroyos, auto salvage yards, plugged oil and gas wells, private wells, and septic systems.

Action items identified by the Roswell source water protection team include: hosting a public forum to present this document and receive public feedback; obtaining more hydrological data on the upper and lower aquifers and modeling a more accurate capture zone for the City wells; and developing City zoning ordinances to protect and safeguard City wellfields. It is the intention of the City to review and update the source water assessment and plan every two years.

1 - Introduction

Protecting Your Drinking Water through Source Water Protection Planning

Access to safe, clean drinking water is a right to every citizen in this state and is a key component in maintaining a healthy and viable community. All drinking water sources are vulnerable to contamination from a variety of human activities. Without attention to managing these potential sources of contamination, communities will be faced with increased costs and potential loss of their drinking water sources. Water sources in New Mexico are also highly vulnerable to depletion through unsustainable use and drought. Careful planning and monitoring for source water supply is invaluable.

Applying proactive measures through source water protection planning is less expensive and more reliable over the long term. If an aquifer that supplies drinking water to a community becomes contaminated, the cost of restoring clean drinking water costs far more than the costs of water treatment alone. The underlying principle in Source Water Protection is that prevention is the most effective and efficient method to assure long-term safe drinking water.

Source Water Protection Plans (SWPP) go beyond a basic source water assessment to create an effective management tool with strategies for protecting a community's source of drinking water. SWPPs not only provide a source water contaminant inventory and vulnerability assessment, but include water system and hydrogeologic information, source water area maps, best management practices, and action items developed by the public water system through a public participation process.

The purpose of this document is to provide an effective planning tool for Roswell's Municipal Water System to protect its source of drinking water. This Source Water Protection Plan has been developed in coordination with the New Mexico Environment Department (NMED) following standard guidelines for source water plans developed by the U.S. Environmental Protection Agency and NMED. The document is designed to provide relevant information that informs sustainable source water management and that can be easily updated.

1.1 Background - Source Water Protection Assistance for Public Water Systems

U.S. Congress amended the Safe Drinking Water Act in 1996 to provide for the assessment and protection of sources of public water supply. The U.S. EPA provides guidance and encourages partnerships for the voluntary process of source water protection planning. States, including New Mexico completed source water assessments between 2002 and 2006 for all public water systems, and are now implementing strategies to help local communities use and update the information obtained from these assessments.

NMED's Drinking Water Bureau's, Source Water Protection Program works with individual water systems, such as Roswell Municipal, with input from the community and other interested parties.

The program assists in the development of a Source Water Protection Plan that is unique to your individual system and offer ways to identify potential sources of contamination and other threats to your drinking water, while designing a plan that will protect your water system.

1.2 Roswell Source Water Protection

Roswell is in Chaves County with a population of 48,600 served by 19,000 service connections. Roswell provides water to Bottomless Lakes State Park (NM3580103) via a consecutive connection serving 526 people with 10 service connections. Average daily water production for 2017 was about 11 million gallons.

Roswell's Goals for Source Water Protection
Preserve the high-quality drinking water source currently available in the aquifer • Encourage city residents to use city water instead of private wells (properly plug existing wells • More public education on water issues such as conservation and cross connection. • Provide the public with additional and easier ways to notify the city of potential problems with the water system.
Preserve a sustainable quantity of water available in the aquifer for future generations • Encourage water conservation practices throughout the city and region

2 – Source Water Plan Development Process

The source water planning process began with an update to the *New Mexico Environment Department, 2004; Source Water Assessment & Protection Program, Report of Roswell Municipal Water Supply Water Utility, Public Water System #[NM35]20203* (NMED, 2004).

NMED and their contractor, Daniel B. Stephens & Associates (DBS&A) worked with the Roswell Water Production Department to gather background information for the current system structure and to identify all potential sources of contamination and other issues of concern for the system's wells. The assessment includes a susceptibility analysis on the risk of contamination for the city wells. The 2018 "Source Water Assessment, City of Roswell, New Mexico (PWS #NM3520203)" is available from the City of Roswell upon request.

When the assessment was completed, the Roswell and NMED members of the assessment workgroup expanded to include other City staff and outside entities who developed a draft source water protection plan.

2.1 Source Water Planning Stakeholder Participation

Stakeholder participation is an important part of the source water planning process. Involving a broad array of local officials, community groups, water professionals, and other interested community members in the source water protection planning process, Roswell is helping to ensure the ongoing success of this effort.

Table 1: Source Water Planning Participation

Stakeholders			Workgroups	
Participant	**Title**	**Affiliation**	**Assessment**	**SWPP**
Roger Buckley	Water Production Superintendent	City of Roswell	X	X
Jesus Talamantes	Water Production Supervisor	City of Roswell	X	X
Jill Turner	Program manager	NMED DWB Source Water Protection Program	X	X
David Torres	Source Water Protection Specialist	NMED DWB Source Water Protection Program	X	X
Kelly Baker	Water Planner	Daniel B. Stephens & Associates (contractor to NMED-DWB)	X	
Jennifer Hill	Senior Engineer	Daniel B. Stephens & Associates (contractor to NMED-DWB)	X	
Louis Najar	Director of Planning & Engineering	City of Roswell		X
Glenda Allen	Engineering - civil engineering tech	City of Roswell		X
Eric Boyda	Watershed manager	Village of Ruidoso & Lower Pecos River Water Association		X
Aron Balok	Superintendent	PVACD Pecos Valley Artesian Conservancy District		X

(This section to be amended for final document)

Others who participated in the process and provided comments will be acknowledged here.

A public meeting to introduce the source water assessment and protection plan will be held in spring 2019.

3 – Water System Facility Information

Roswell's Water Production Department lies within the City's Public Works.

Water Production employees are located at Central Control. There are 11 employees and their primary responsibility is the operation and maintenance of the following:

- 5 reservoirs
- 4 pressure regulating stations
- 20 water wells

This facility is operated around the clock and water production and reservoir levels are continuously monitored.

- The City has 26,189 acre feet of water rights available for consumption per year
- 20,000 acre feet are currently pumped per year
- There are 3,888 acre feet of water rights in reserve for future needs
- The last source of water rights would be return flow credit for effluent discharged to the Rio Hondo

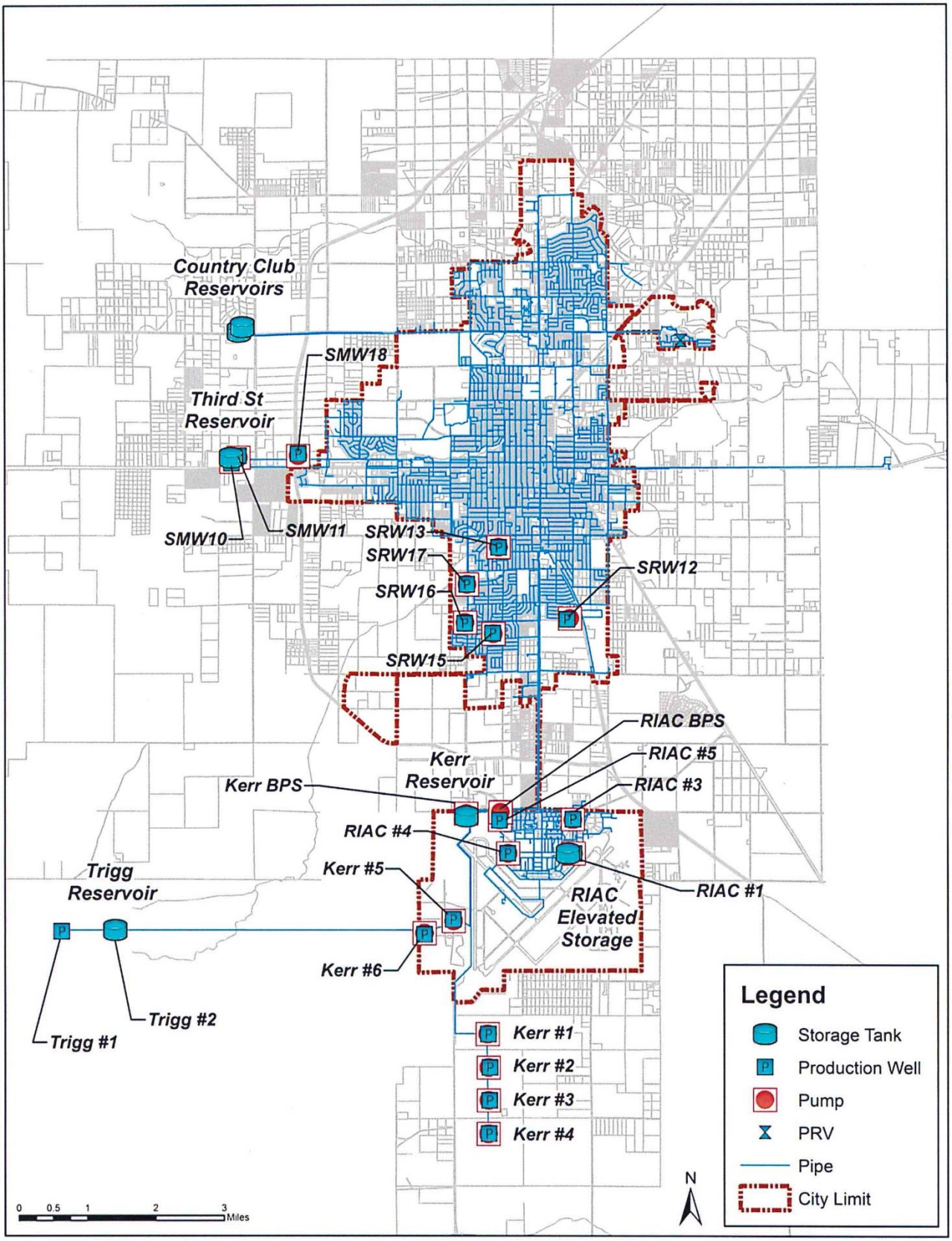
The Roswell Municipal Water System consists of the following infrastructure:

- 20 active production wells
- 21 treatment plants (disinfection, gaseous chlorination, post)
- 2 booster stations with a total of 8 booster pumps
- steel storage tanks: 3,500,000 gal, 5,000,000 gal, 500,000 gal, and 100,000 gal
- 2 concrete storage tanks 7,500,000 gal each

Additional information on the Roswell system, including water quality testing data, can be found on New Mexico Environment Department's Drinking Water Watch website at: https://dww.water.net.env.nm.gov/NMDWW/

3.1 Emergency & Contingency Planning

Roswell Water System strives to be prepared for any emergency situation that may arise. There is an emergency response plan in place that describes the people or organizations, along with their contact information, that need to be contacted when various situations happen ("City of Roswell, Central Control, Emergency Response Plan", 10/15/2018.) There are also emergency backup generators at our main location and two of our well sites in the event of a power failure.


Country Club Reservoirs
SMW18
Third St Reservoir
SMW10
SMW11
SRW13
SRW17
SRW16
SRW15
SRW12
RIAC BPS
RIAC #5
RIAC #3
Kerr Reservoir
Kerr BPS
RIAC #4
RIAC #1
Kerr #5
Trigg Reservoir
RIAC Elevated Storage
Kerr #6
Trigg #2
Trigg #1
Kerr #1
Kerr #2
Kerr #3
Kerr #4
Legend
Storage Tank
Production Well
Pump
PRV
Pipe
City Limit
N
0 0.5 1 2 3 Miles

4 – Water Production & Source Water Supply

Artesian groundwater provides the source for Roswell's 20 active wells. The City is very fortunate to have a quick recharge aquifer with a consistent supply of quality water. Currently there are no conservation measures in place for consumers due to the ample water supply.

4.1 Water Production:

The Roswell Water System produced an average of 4.23 billion gallons in the period between 2008 and 2017 with the lowest amount (3.74 bg) in 2015 and the highest (4.89 bg) in 2011 (Figure 1).

The amount of water produced annually varies from year to year depending on the amount of precipitation; over the last 10 years the water system has averaged about 4.2 billion gallons of water produced annually. The amount of water produced each month follows a typical trend for the southern New Mexico area with variations on an annual basis (Figure 2).

Figure 1

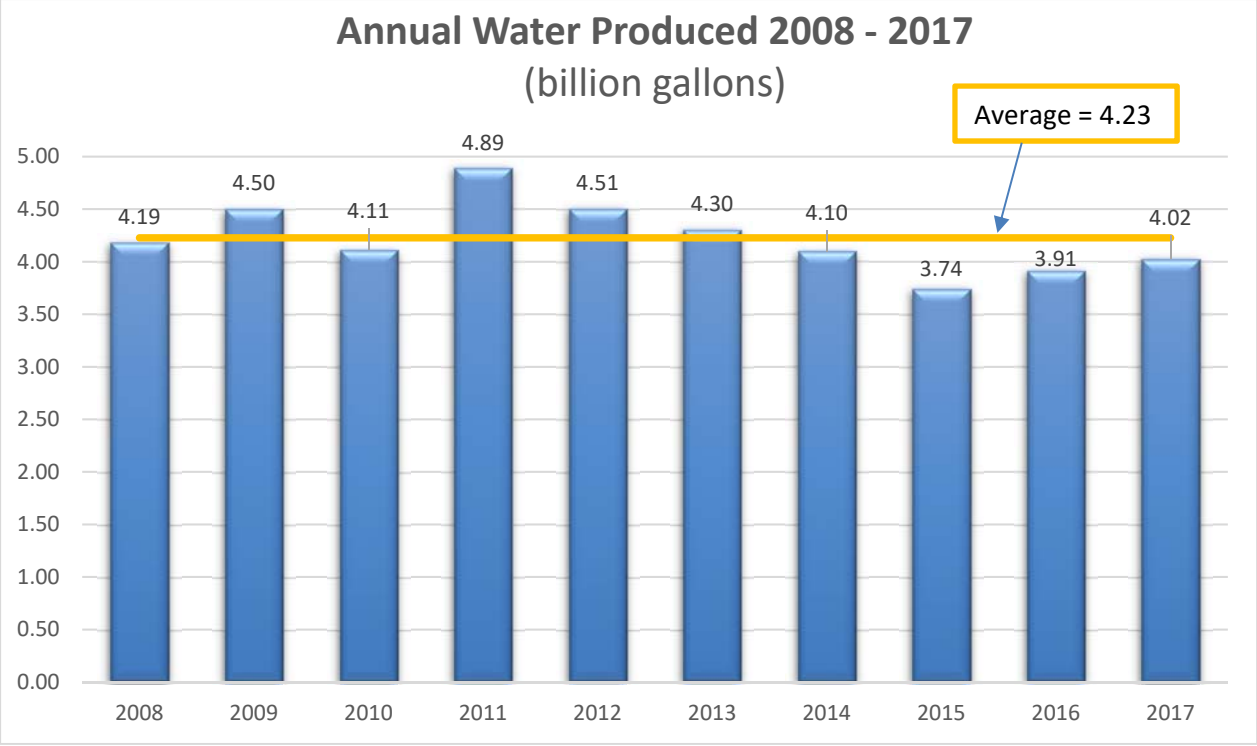
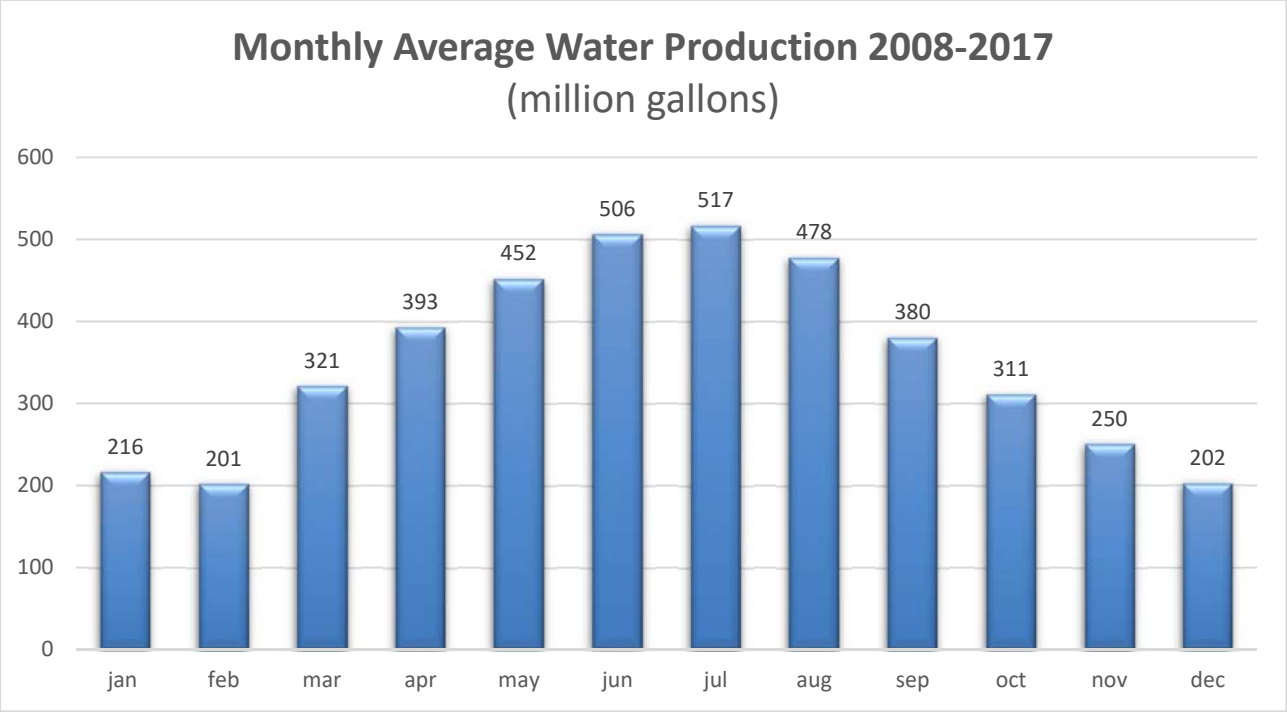


Figure 2



4.2 Source Water Supply - Regional Hydrogeology – Roswell Basin Aquifer System

The Roswell Basin aquifer system consists of two aquifers: an alluvial aquifer and an underlying carbonate-rock aquifer (DBS&A, 2018). The system covers an area of about 2,200 square miles, extending from just north of Roswell to northwest of Carlsbad, New Mexico. This aquifer is the most permeable and extensively used aquifer within a larger 12,000-square mile area of carbonate rocks that extends from Vaughn, New Mexico to the New Mexico-Texas border.

The Roswell Basin aquifer system is primarily recharged from infiltration of precipitation in the unconfined region of the carbonate-rock aquifer and the overlying unconfined alluvium. Recharge also stems from surface water in streams and ponds, and irrigation water applied to fields. The carbonate-rock aquifer also receives minimal recharge from the alluvial aquifer above through the leaky confining layer between the two aquifers when the potentiometric surface of the carbonate-rock aquifer is lower than the potentiometric surface of the alluvial aquifer. The NM Bureau of Geology states that "The Roswell Artesian Basin has been described as a world-class example of a rechargeable artesian aquifer system" (NMBG; 2018).

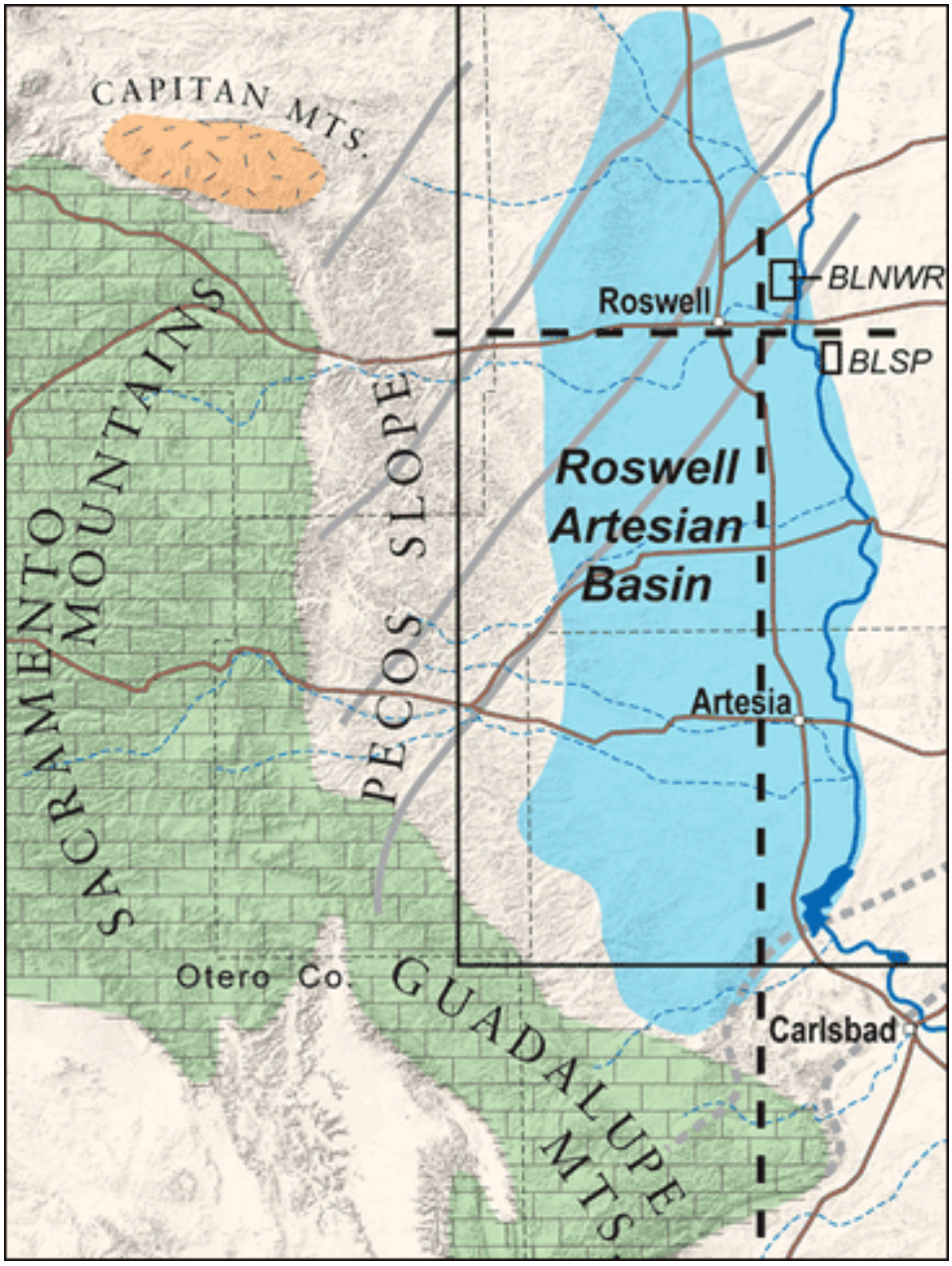


Figure 3: Roswell Artesian Basin (source: NM Bureau of Geology; 2018)

In addition to the discharge from wells, the artesian aquifer also discharges to the shallow aquifer, and, in places where the river flows direction on top of the confining beds, directly to the Pecos river via fractures (USGS 1983).

Water levels in the San Andres lime-stone aquifer of the Roswell Artesian Basin fell by as much as 230 ft since being used for irrigation. Due to conservation, levels have rebound in most areas. Between 1975 and 2005 hydraulic head in the artesian aquifer increased by between 10 and 20 feet in the Roswell area. Due to the high transmissivity of the artesian aquifer, pumping results in shallow yet broad cones of depression (NMBG; 2007).

4.3 Regional Source Water Quality

In the northeastern portion of the carbonate aquifer, concentrations of dissolved sodium and chloride in the groundwater are rather high. Sodium concentrations range from 1,500 to 3,000 mg/L, and chloride concentrations range from 2,000 to 5,000 mg/L. Total dissolved solids (TDS) concentrations in this area can range from 7,000 to 12,000 mg/L. In the northern half of the aquifer, the water is a mixed calcium-sodium-sulfate-chloride type. Sulfate concentrations measured in 1994 from Roswell's wells showed concentrations from just over 250 ppm to 690 ppm. In the eastern part of the alluvial aquifer, chloride concentrations can be very high in the water near the upper or lower parts of the aquifer. The chloride concentration changes with the irrigation pumping, peaking after irrigation season. The largest seasonal variation in mineral concentrations occurs in the area between Roswell and the Pecos River (USGS; 1983).

Samples from several Roswell wells including the Kerr wells, were taken as part of a survey of community water systems for a 1980 report. The samples were taken between 1975 and 1979, with the exact date unspecified. A comparison of the results from this survey for a few selected analytes from 3 of the Kerr wells and more recent results is shown in Table 1. This comparison shows a fair amount of consistency in the concentrations of the selected contaminants for each well between the two sample periods. Several analytes were found to be below the detection limit for the Kerr wells in the 1980 Report, including arsenic, mercury, and lead (NMEID, 1980).

Table 2: Kerr Well Water Quality Samples

Kerr well sample results from the 1980 Chemical Quality Report and 1994						
Well	**Kerr #1**		**Kerr #2**		**Kerr #3**	
Analyte/Sample date	Pre-1980	1994	Pre-1980	1994	Pre-1980	1994
Sulfate (mg/l)	264.3	254	267.6	266	274.1	262
Fluoride (mg/l)	0.91	0.9	0.90	0.9	0.93	1
Nitrate (mg/l)	1.20	1.1	1.11	1.1	0.84	0.8

5 – Source Water Protection Area

For the 2018 Roswell Source Water Assessment, source water protection areas for individual wells of the Roswell PWS were defined using an "arbitrary fixed radii" method resulting in four fixed radius circular zones extending out to a one-mile radius (DBS&A, 2018). These are:

- Zone A: radius of 0 to 200 feet from the wellhead
- Zone B: radius of 200 to 500 feet from the wellhead
- Zone C: radius of 500 to 1,000 feet from the wellhead
- Zone D: radius of 1,000 to 5,280 feet (1 mile) from the wellhead

These zones and distances are commonly used in source water planning and are intended to roughly represent time of travel for water within the well capture zone. A more sophisticated method of delineation can be used in a future phase of source water planning to provide increased accuracy of the source water area and a well's capture zone. Choosing a more advanced method will depend on time, cost, and hydrogeologic data available.

Source Water Protection Area Maps from the 2018 Source Water Assessment are included in the following pages.

N

0 800 1600 Feet

Explanation

- City well
- Source water protection area

Source water protection area buffer zone

- Zone A: 0-200 ft
- Zone B: 200-500 ft
- Zone C: 500 - 1,000 ft
- Zone D: 1,000 – 5,280 ft

PSOCs

- Auto salvage yard
- AST facility
- Underground storage tank facility
- Leaking underground storage tank site
- Septic system in source water protection area

Well in OSE database

- Domestic
- Other
- Road
- Arroyo

2016 NAIP aerial imagery

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5/8/2018 JN NM15.0090

ROSWELL MUNICIPAL WATER SYSTEM
SOURCE WATER PROTECTION PLAN

City Wells 10, 11, and 18
Potential Sources of Contamination

Figure 2

Explanation

- City well
- Source water protection area

Source water protection area buffer zone

- Zone A: 0-200 ft
- Zone B: 200-500 ft
- Zone C: 500 - 1,000 ft
- Zone D: 1,000 – 5,280 ft

PSOCs

- AST facility
- Underground storage tank facility
- Leaking underground storage tank site
- Landfill entrance
- Voluntary remediation site
- Farm equipment supplier
- Funeral home
- Hardware/lumber/parts store
- Veterinary supply or facility
- Septic system in source water protection area

Groundwater permit (status)

- Active

Oil and gas wells (EMNRD/OCD)

- Oil, plugged

Well in OSE database

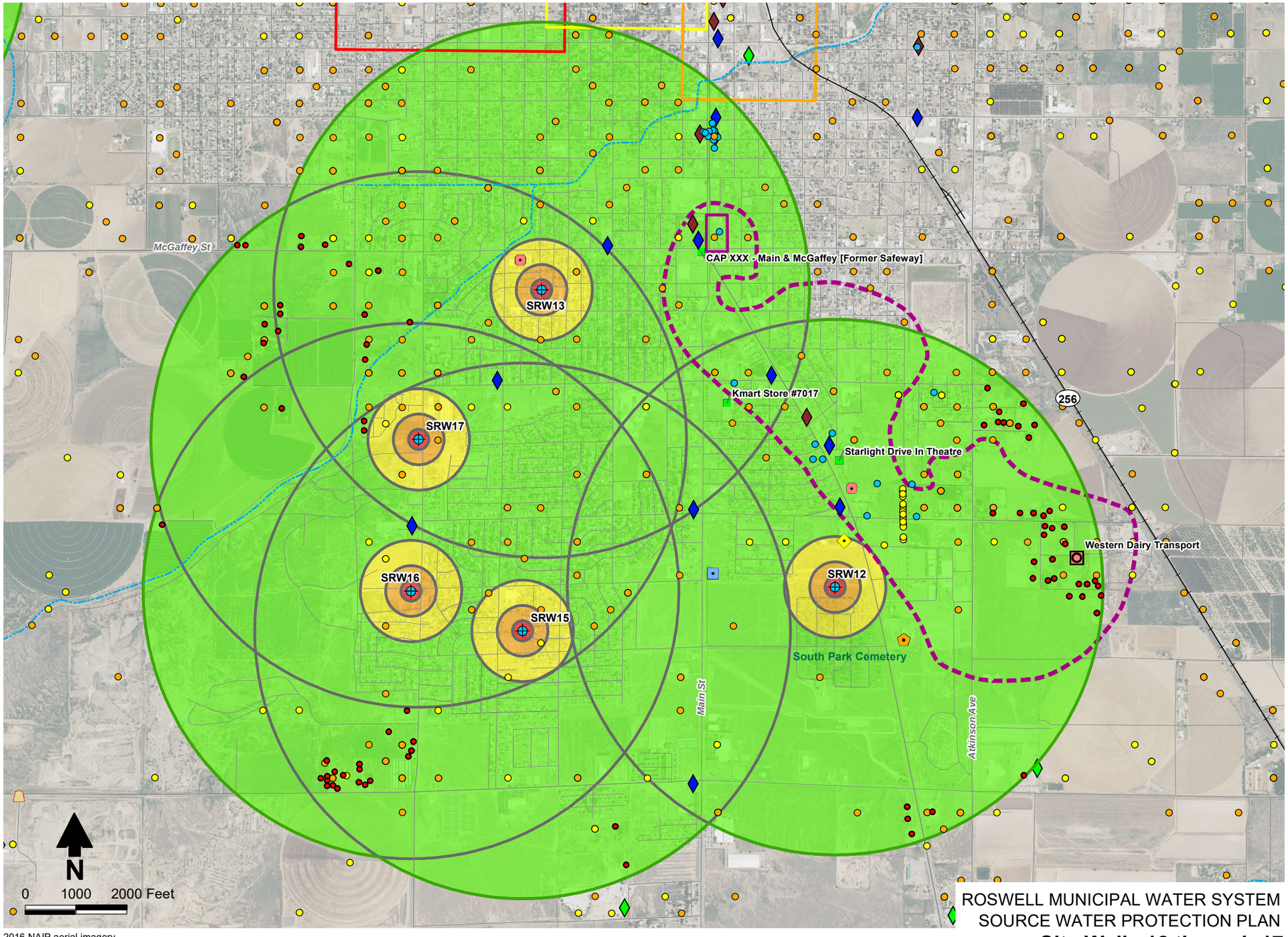
- Domestic
- Monitoring
- Other
- Road
- Railroad
- Arroyo

McGaffey and Main Ground Water Plume Superfund Site

- General source area
- PCE/TCE plume (2015)

Lea and West Second Street Superfund Site

- Site 1
- Site 3
- Site 4



2016 NAIP aerial imagery

ROSWELL MUNICIPAL WATER SYSTEM
SOURCE WATER PROTECTION PLAN

City Wells 12 through 17
Potential Sources of Contamination

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5/8/2018 JN NM15.0090

Figure 3

N

0 1200 2400 Feet

Explanation

- City well
- Source water protection area

Source water protection area buffer zone

- Zone A: 0-200 ft
- Zone B: 200-500 ft
- Zone C: 500 - 1,000 ft
- Zone D: 1,000 – 5,280 ft

PSOCs

- Abatement site
- AST facility
- Underground storage tank facility
- Septic system in source water protection area

Groundwater permit (status)

- Active
- Terminated

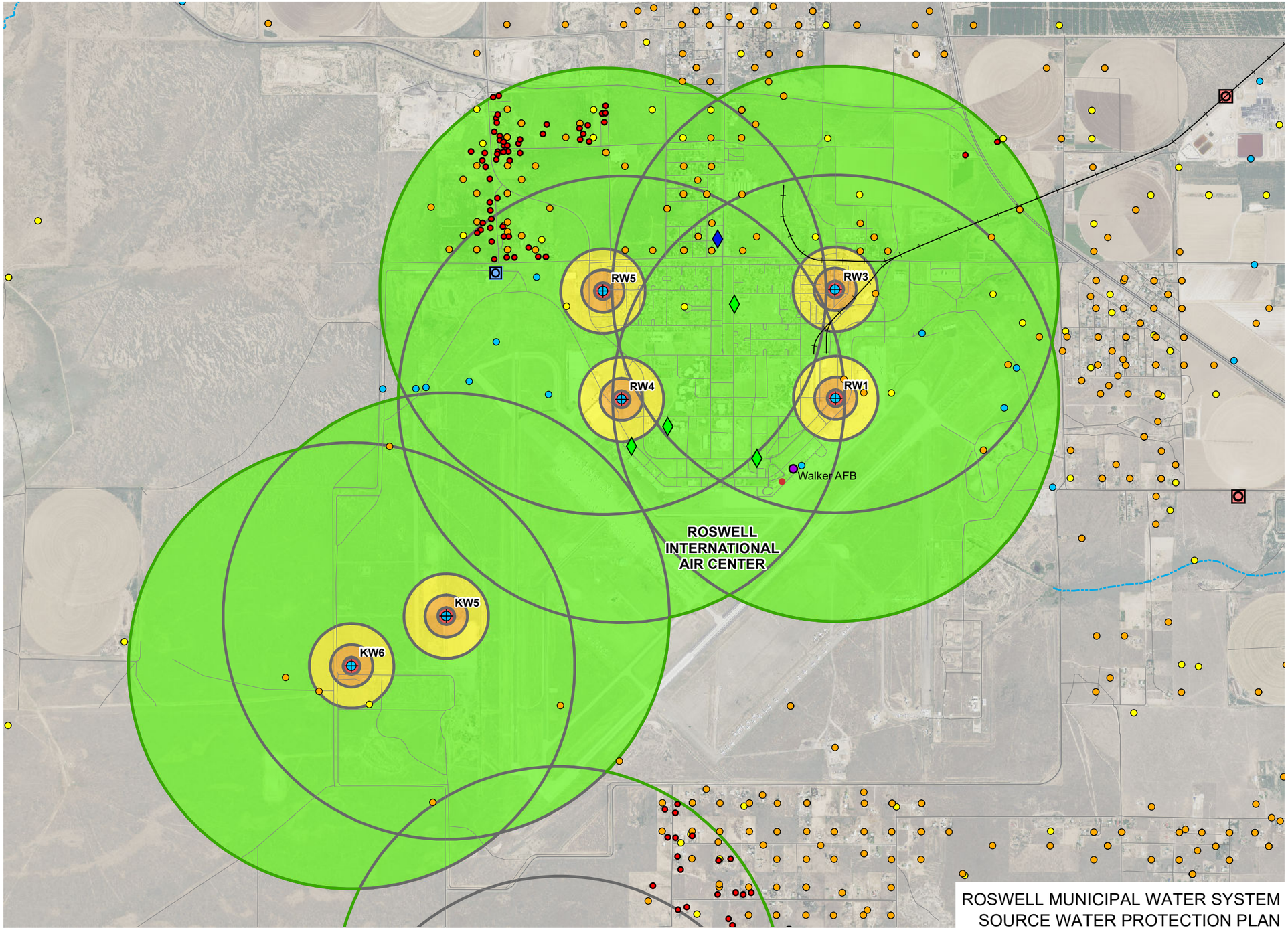
Oil and gas wells (EMNRD/OCD)

- Oil, plugged

Well in OSE database

- Domestic
- Monitoring
- Other

- Road
- Railroad
- Arroyo



2016 NAIP aerial imagery

ROSWELL MUNICIPAL WATER SYSTEM
SOURCE WATER PROTECTION PLAN

Riac and Kerr Wells
Potential Sources of Contamination

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5/8/2018 JN NM15.0090

Figure 4

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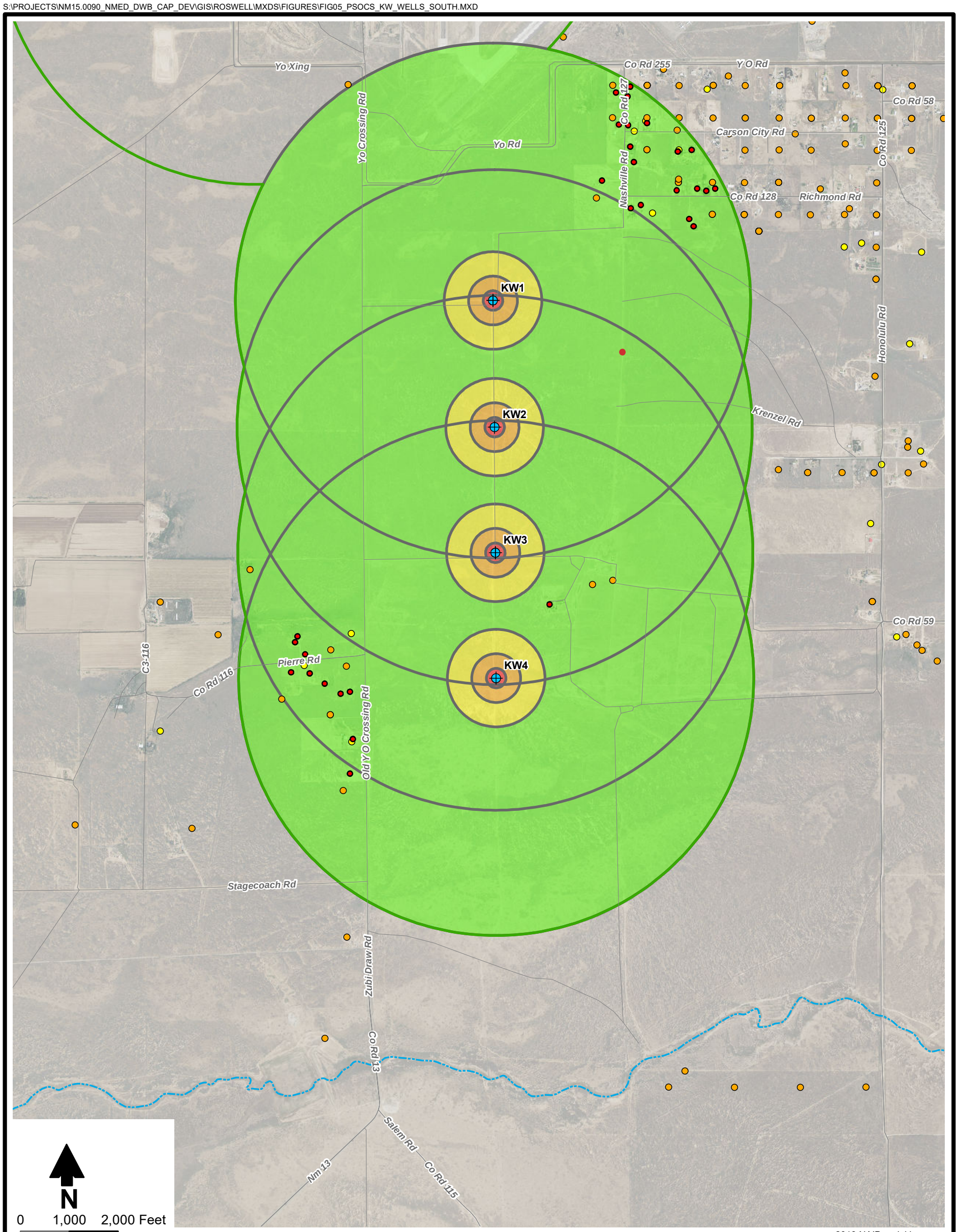

Explanation

- City well
- Source water protection area

Source water protection area buffer zone

- Zone A: 0-200 ft
- Zone B: 200-500 ft
- Zone C: 500 - 1,000 ft
- Zone D: 1,000 – 5,280 ft

PSOC

- Road
- Arroyo
- Septic system in source water protection area

Oil and gas wells (EMNRD/OCD)

- Oil, plugged

Well in OSE database

- Domestic
- Other

ROSWELL MUNICIPAL WATER SYSTEM
SOURCE WATER PROTECTION PLAN

Kerr Wells South
Potential Sources of Contamination

Figure 5

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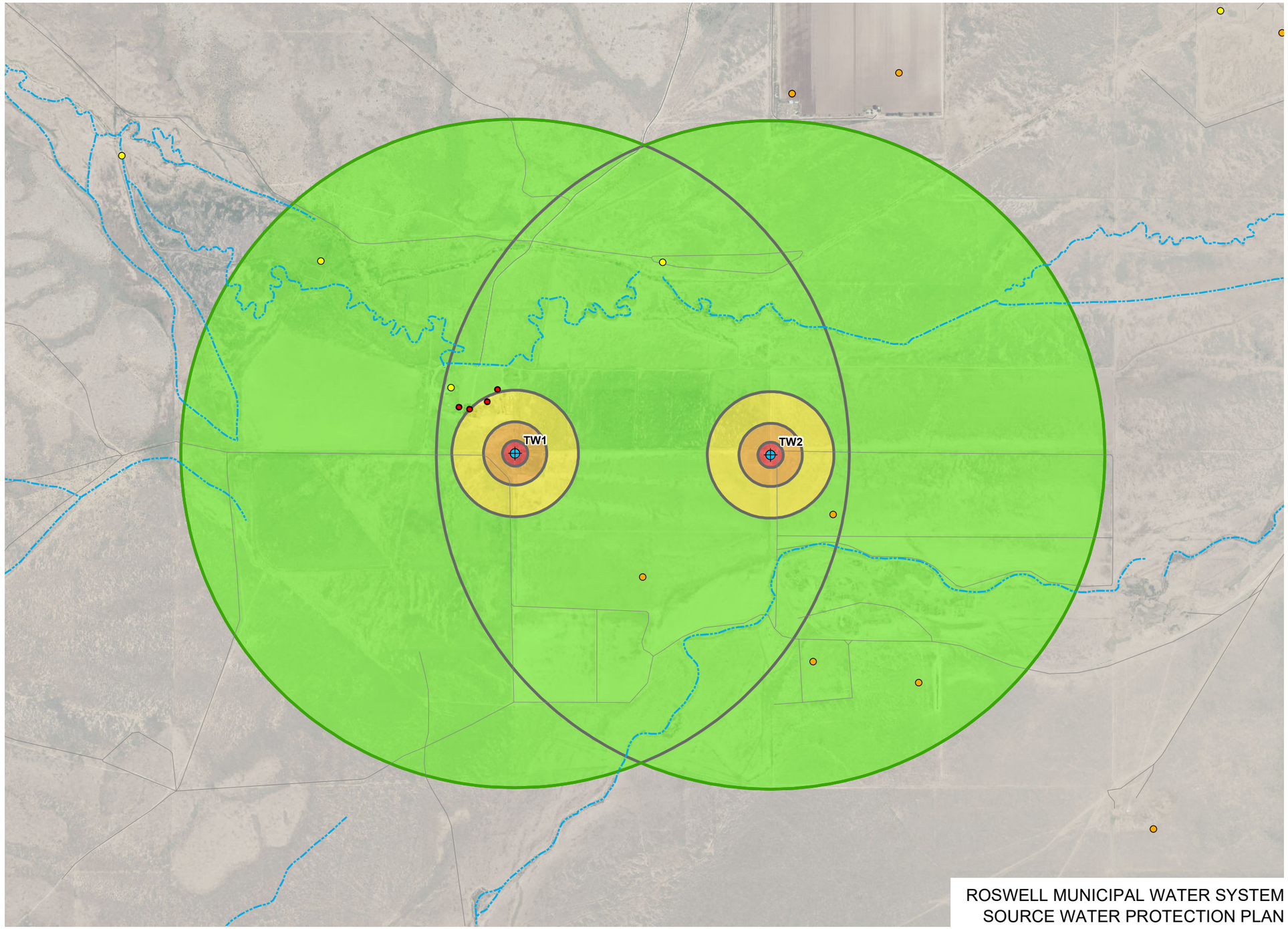

N

0 800 1600 Feet

Explanation

- City well
- Source water protection area

Source water protection area buffer zone

- Zone A: 0-200 ft
- Zone B: 200-500 ft
- Zone C: 500 - 1,000 ft
- Zone D: 1,000 – 5,280 ft

PSOCs

- Septic system in source water protection area

Well in OSE database

- Domestic
- Other
- Road
- Arroyo

2016 NAIP aerial imagery

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ROSWELL MUNICIPAL WATER SYSTEM
SOURCE WATER PROTECTION PLAN

Trigg Wells
Potential Sources of Contamination

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5/8/2018 JN NM15.0090

Figure 6

6 - Source Water Assessment and Potential Sources of Contamination (PSOC)

The 2018 City of Roswell Source Water Assessment (Assessment) included an inventory of both existing and potential sources of contamination and a susceptibility analysis to determine the threat level of those contaminants to the system (DBS&A, 2018). Chemical contaminants considered are primarily limited to those under the National Primary Drinking Water Regulations with Maximum Contaminant Levels (MCLs) established by EPA.

6.1 Inventory of Existing & Potential Contaminants

Potential sources of contamination (PSOCs) are defined as any possible site or event that could, under any circumstance and time frame, lead to contamination of a water system's sources. Not all sites identified as PSOCs pose the same level of risk. Due to type of PSOC, some sites may pose little to no contamination risk, while others may pose an imminent threat. Sources of contamination (SOCs) are considered those activities which are currently threatening or contaminating the source water.

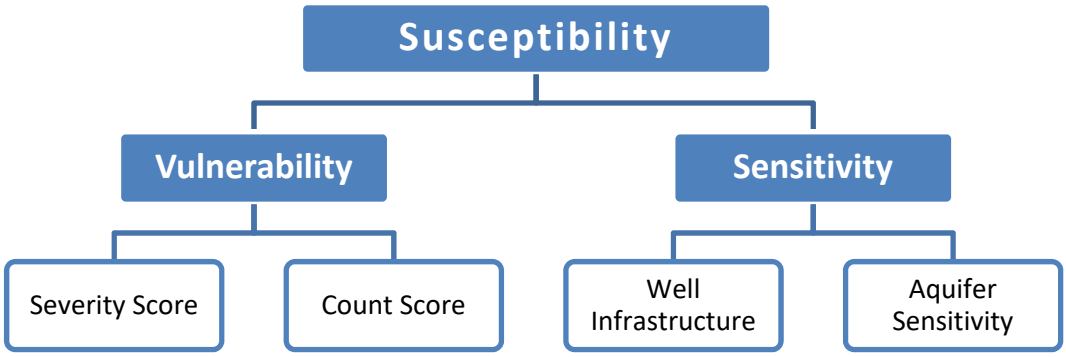
Locations of SOCs and PSOCs for the Roswell system are found on the source water protection area maps of the Assessment.

A full list of SOCs and PSOCs for each well are found in Table 6 of the Assessment.

The Assessment included all identified existing and potential sources of contamination present in the source water areas for the Roswell city wells. The existing contamination is, so far, restricted to the upper aquifer only and is not known to affect the lower aquifer where the city wells draw their water. The SOCs and PSOCs pose different levels of risk to Roswell's source water and so require varying levels of management.

6.2 Susceptibility Analysis

The susceptibility analysis was developed to determine of risk of contamination for each well. The analysis combines results of a **vulnerability assessment** and a **sensitivity assessment**.



Vulnerability

The vulnerability ranking is based on the type and number of PSOCs and SOCs present within a well's SWPA and is calculated as: **Severity Score x Count Score = Vulnerability Rank**

The severity score considers both the likelihood of a contamination event due to the type of PSOC or SOC, and the contaminant that might impact or has impacted the water source. The count is the number of times a given PSOC type occurs per zone. A count score is then given to represent the PSOC count range (i.e. counts of 2-5 = 2; 6-10 = 3…). This is done so that a large number of small sources such as septic tanks could not give such a high score and overwhelm all the other factors.

Severity scores given to each SOC and PSOC in the assessment range from .1 to 5. PSOCs were given risk severity scores from 0-1; SOCs were scored from 2-5 given their greater threat value.

Sensitivity

The sensitivity is an evaluation of two components:

1. well infrastructure (based on the 2002 SW Assessment by NMED)
2. aquifer sensitivity within a well's SWPA

Each well's **final susceptibility ranking** from the assessment is shown in Table 1 below.

Table 3- Final Susceptibility Rank from 2018 Roswell Source Water Assessment

Final Susceptibility Rank by Well			
Well	**Sensitivity Ranking**	**Vulnerability Ranking**	**Susceptibility Ranking**
City Well #10 (SMW10)	Moderate	High	Moderately high
City Well #11 (SMW11)	Moderate	High	Moderately high
City Well #12 (SRW12)	Moderate	High	Moderately high
City Well #13 (SRW13)	Moderately high	High	High
City Well #15 (SRW15)	Moderately high	High	High
City Well #16 (SRW16)	Moderate	Moderate	Moderate
City Well #17 (SRW17)	Moderately high	Moderate	Moderately high
City Well #18 (SMW18)	Moderate	Moderately high	Moderately high
Riac Well #1 (RW1)	Moderate	High	Moderately high
Riac Well #3 (RW3)	Moderately high	High	High
Riac Well #4 (RW4)	Moderate	High	Moderately high
Riac Well #5 (RW5)	Moderate	Moderate	Moderate
Kerr Well #1 (KW1)	Moderate	Moderately low	Moderate
Kerr Well #2 (KW2)	Moderate	Low	Moderately low
Kerr Well #3 (KW3)	Moderately low	Moderately low	Moderately low
Kerr Well #4 (KW4)	Moderate	Moderately low	Moderate
Kerr Well #5 (KW5)	Moderate	Low	Moderately low
Kerr Well #6 (KW6)	Moderate	Low	Moderately low
Trigg Well #1 (TW1)	Moderate	Low	Moderately low
Trigg Well #2 (TW2)	Moderate	Low	Moderately low

Table 4 - Contamination Threats with Vulnerability Score of 1 or Higher

Well Name	Buffer Zone	PSOC / SOC	PSOC & SOC Description	Count	Count Score	Severity Score	PSOC & SOC Vulnerability Score
City Well #10	D	PSOC	AST facility	2	2	0.5	1
City Well #10	D	SOC	Leaking underground storage tank	1	1	4	4
City Well #10	D	PSOC	Private well	194	10	0.2	2
City Well #10	D	PSOC	Septic system	234	10	0.3	3
City Well #11	D	PSOC	AST facility	2	2	0.5	1
City Well #11	D	SOC	Leaking underground storage tank	1	1	4	4
City Well #11	D	PSOC	Private well	185	10	0.2	2
City Well #11	C	PSOC	Septic system	14	4	0.3	1.2
City Well #11	D	PSOC	Septic system	229	10	0.3	3
City Well #12	D	SOC	Leaking underground storage tank	1	1	4	4
City Well #12	C	SOC	McGaffey and Main Ground Water Plume Superfund Site	1	1	5	5
City Well #12	D	PSOC	Septic system	37	5	0.3	1.5
City Well #12	D	PSOC	Underground storage tank	5	2	0.8	1.6
City Well #12	D	SOC	Voluntary Remediation Site: Kmart Store #7017	1	1	3	3
City Well #12	D	SOC	Voluntary Remediation Site: Starlight Drive-In Theater	1	1	3	3
City Well #13	D	SOC	Lea and West Second Street Superfund Site (Sites 1, 3, and 4)	3	2	5	10
City Well #13	D	SOC	Leaking underground storage tank	4	2	4	8
City Well #13	D	SOC	McGaffey and Main Ground Water Plume Superfund Site	1	1	5	5
City Well #13	D	PSOC	Private well	153	10	0.2	2
City Well #13	D	PSOC	Septic system	14	4	0.3	1.2
City Well #13	D	PSOC	Underground storage tank	6	3	0.8	2.4
City Well #13	D	SOC	Voluntary Remediation Site: CAP XXX Main & McGaffey [former Safeway]	1	1	3	3
City Well #13	D	SOC	Voluntary Remediation Site: Kmart Store #7017	1	1	3	3
City Well #15	D	SOC	Leaking underground storage tank	1	1	4	4
City Well #15	D	PSOC	Private well	89	8	0.2	1.6
City Well #15	D	PSOC	Septic system	25	5	0.3	1.5

City Well #15	D	PSOC	Underground storage tank	4	2	0.8	1.6
City Well #16	D	PSOC	Private well	89	8	0.2	1.6
City Well #16	D	PSOC	Septic system	25	5	0.3	1.5
City Well #16	D	PSOC	Underground storage tank	2	2	0.8	1.6
City Well #17	D	PSOC	Private well	100	8	0.2	1.6
City Well #17	D	PSOC	Septic system	20	4	0.3	1.2
City Well #17	D	PSOC	Underground storage tank	2	2	0.8	1.6
City Well #18	D	PSOC	AST facility	2	2	0.5	1
City Well #18	D	SOC	Leaking underground storage tank	1	1	4	4
City Well #18	D	PSOC	Private well	236	10	0.2	2
Kerr Well #1	D	PSOC	Septic system	19	4	0.3	1.2
Kerr Well #4	D	PSOC	Septic system	11	4	0.3	1.2
Riac Well #1	D	SOC	Abatement site: Walker Air Force Base	1	1	4	4
Riac Well #1	D	PSOC	AST facility	6	3	0.5	1.5
Riac Well #1	D	PSOC	Private well	52	6	0.2	1.2
Riac Well #1	D	PSOC	Septic system	256	10	0.3	3
Riac Well #3	D	SOC	Abatement site: Walker Air Force Base	1	1	4	4
Riac Well #3	D	PSOC	AST facility	5	2	0.5	1
Riac Well #3	D	PSOC	Private well	94	8	0.2	1.6
Riac Well #4	D	SOC	Abatement site: Walker Air Force Base	1	1	4	4
Riac Well #4	D	PSOC	AST facility	6	3	0.5	1.5
Riac Well #4	D	PSOC	Private well	56	6	0.2	1.2
Riac Well #4	D	PSOC	Septic system	14	4	0.3	1.2
Riac Well #5	D	PSOC	AST facility	3	2	0.5	1
Riac Well #5	D	PSOC	Private well	119	9	0.2	1.8
Riac Well #5	D	PSOC	Septic system	54	6	0.3	1.8

7 – Managing for Source Water Protection

This section of the Source Water Protection Plan considers the issues of concern and the recommended management practices, actions, and protection strategies.

All of Roswell's 20 municipal wells are artesian and have depths of over 300 feet with twelve over 500 feet. This depth, below the confining layer adds a level of protection from contamination occurring at or near the surface; as such, contamination risk to these wells is reduced. However, the thickness and structural integrity of the confining layer varies and is not understood in detail throughout most of the area. A greater understanding of the hydrogeologic connection between the upper and lower aquifers would greatly increase the ability assess risk of contamination for the Roswell source water.

7.1 Issues of Concern – KNOWN EXISTING Sources of Contamination (SOCs)

Note: contaminants are expressed in milligrams per liter (mg/L) in order to correspond to Maximum Contaminant Levels (MCL) for National Primary Drinking Water standards.

Abatement Site: Walker Air Force Base	
Vulnerability Scores:	4
Wells & Zones Affected:	• Riac Wells #1 (all zones), 3, 4 (zone D)
Contaminants of Concern	• Trichloroethylene (TCE) (MCL = .005 mg/L) • Perchloroethylene (PCE/PERC)

Issue:

The site was operated by the Department of Defense from 1941-1967. When the Base closed in 1967, a majority of the property was deeded to the city and became Roswell International Air Center (RIAC). The city has leased the property to various tenants since that time.

- TCE contamination was detected in residential wells of the Y-O subdivision with investigations of individual areas occurring since 1991. (Ball, 2009)
- There are 2-3 significant TCE plumes. The greatest concentration is found in the upper aquifer with <0.005 mg/L (5 ppb) in most areas of the lower regional (confined) aquifer.
- There are numerous monitoring wells in the plume area including 4 wells in the lower confined aquifer.
- Sampling events conducted in 2005 by U.S. EPA
- Sampling events were conducted in 2009 and again in 2017. In the latter study, two shallow monitoring wells had MCL exceedances: MW-102 had concentrations of .18 mg/L and .19 mgL. In the same study, deep well DW-004 had a TCE detection of .0014 mg/L. (EA Engineering, 2018)

- An abatement plan for the TCE was followed between 1998 – 2003 but was found ineffective.
- There have not been any remediation activities to date.
- The US Army Corps of Engineers (USACE) currently administers the site; an initial Work Plan was submitted to the NMED Ground Water Quality Bureau. Abatement and legal processes between the City of Roswell, NMED, and USACE are ongoing

Concerns:

- Potential contamination of source water (lower aquifer) by current groundwater contamination plume. The contamination is mostly affecting the upper aquifer, however there have been instances of deeper wells with traces of contamination, suggesting a possible connection between the two aquifers.
- One of the 4 deep aquifer monitoring wells, DW-002 had TCE detections in 2003 of 0.0012 mg/L and in 2009 of 0.003 mg/L indicating that there is some amount of contamination from this site is present in the lower aquifer (Snyder, 2018). Another deep aquifer well, DW-004, had a detection of 0 .0014 mg/L in a 2017 sampling event. DW-002 was plugged after 2009 and so was not sampled in 2017 (EA Engineering, 2018).
- RIAC Wells near the site have had detections of both chemicals, but they have been below the Maximum Contaminant Level (MCLs) of 0.005 mg/L. Regulatory samples taken between 2008 and 2018 show these varying results for TCE: RIAC #1 at 0.001 - 0.004 mg/L; RIAC #3 at 0.001 - .002 mg/L; and RIAC #4 at 0.001 - .004 mg/L.
- Riac Well #1 is within the east-central plume area – though the well pulls from the deeper confined aquifer and not from the upper aquifer where the greatest concentration of the plume is located.
- Riac Well #4 is on the edge of the western plume while well #3 is near the edge of the east-central plume.
- In this source water area, the hydrologic conditions regulating exchange of water between the two aquifers needs to be better understood.

Strategies:

- Coordination with the NMED Ground Water Quality Bureau on remediation activities. Review reports regarding this site as updates are made available.
- Roswell is working to plug some of the monitoring wells on this site that have been determined by the city as unnecessary.

Petroleum – Leaking Underground Storage Tank (LUST)	
Vulnerability Scores:	4 - 8
Wells & Zones Affected:	• City Wells #10, 11, 12, 13,15,18
Contaminants of Concern	• Volatile organic compounds such as benzene and synthetic organic compounds such as ethylene dibromide (EDB)

Issues:

Leaking underground [petroleum] storage tanks (LUST) have been identified in several locations near City wells. Many are resolved posing no further threat. Four remain under investigation or are in a cleanup phase.

City Wells #10, 11, & 18:

- These wells share overlapping source water areas (10 & 11 are less than 350 ft. apart). Well # 18 is just inside the eastern edge of #10 & 11's Zone D.
- A new LUST site identified since the May 2018 Source Water Assessment is within all three wells' Zone D and is currently under investigation.
- Just outside the west edge of Well #18 Zone C are two LUST sites. Both are within the NMDOT Roswell Patrol yard. One was discovered in 1999 with a confirmed release and is under "pre-investigation". The other was discovered in 1994 with a confirmed release and deemed "no further action" meaning it is no longer considered to be a threat.

City Wells #12, 13, 15, 16, & 17:

- Of the many LUST sites that have been identified in this area, most are listed as "no further action" or "cleanup completed" and, as such, no longer pose a threat.
- Well #12 has an active LUST site in north Zone D, discovered in 2007 and under investigation.
- Well #13 has an active LUST site in northeast Zone D, discovered in 2011 and undergoing cleanup.

Concerns:

- Potential for contamination of source water (lower aquifer) from existing product already in groundwater.
- The two active LUST sites are located well above the confined lower aquifer and do not pose an immediate threat to the wells. However, a plume of free product (gasoline) does exist.

Strategies:

- Coordinating with the New Mexico Storage Tank Bureau to be notified when the investigation of leaky underground storage tank sites within the SWPA has produced a report.
- Periodic review of groundwater reports from the New Mexico Petroleum Storage Tank Bureau for existing leaky underground storage tank sites and periodic review of the New Mexico EnviroMap.
- Land use controls such as setbacks to supply wells and land use .

Superfund Site – Lea & W. Second St. (sites 1,3, & 4)	
Vulnerability Scores:	10
Wells & Zones Affected:	• City Well #13
Contaminants of Concern	• Trichloroethylene (TCE) & perchloroethylene (PCE/PERC)

Issues:

The Lea and West Second Street Superfund Site consists of four combined sites, where soil and ground water have been impacted by chlorinated solvents to varying degrees. The contaminants containing chlorinated solvents include Trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethene, and trans-1,2-dichoroethene. Currently the site is in the remedial investigation phase, as such little information is available regarding the extent and severity of the contamination.

- Contaminants predominantly from historical dry-cleaning operations were released to the soil and migrated to ground water.
- Comingled contamination from 4 main sites at the north edge of Well #13's Zone D along West and East Second Street. On April 7, 2016, these four grouped sites were added to the National Priorities List as the Lea and West Second Street Superfund NPL site.

  <u>Site 1 ("Denio's"): (156 acres) - 510 - 514 W. Second St.</u>
  Contamination is present on the south side of a building which encompasses the stretch between 510 and 514 West Second Street. Ground water contamination was initially discovered in 2006 during a New Mexico Environment Department (NMED) Leaking Underground Storage Tank (LUST) investigations of the Allsup's 289 and Sawey Gulf Petroleum facilities located downgradient of 510 and 514 West Second Street.

  <u>Site 2: (156 acres) - 507 East Second Street (approximately 0.8 mile east of Site 1)</u>
  Contamination is likely the result of leakage from a private sewer line believed to be associated with former dry cleaning operations that historically have been located

between 505 and 511 East Second Street. Ground water contamination was initially discovered in private supply wells downgradient of 507 East Second Street.

Site 3: (276 acres) – West Second and Montana Ave

The contamination is suspected to have originated within an in-ground separator tank that is associated with drainage of wastes from former dry cleaning operations. Site 3 was discovered by the NMED Superfund Oversight Section during a Site Inspection. Chlorinated solvent contamination was also present in ground water samples from monitoring wells at two adjacent properties on the northeast corner of the intersection of West Second Street and North Montana Avenue.

Site 4 ("Parks Underground Storage Tank Site": (123 acres) – Intersection of S. Virginia Ave. and East Alameda St.

Ground water contamination was initially discovered during ground water monitoring activities conducted at the Parks Site. No source has been identified for the detected chlorinated solvent ground water plume detected in May 2005.

Concerns:

- Potential for source water contamination (lower aquifer) from contamination already in the upper aquifer.
- Mobile and expanding contamination plume.
- Proximity of plume horizontally to Wells #12 and 13
- More detailed understanding of the hydrogeology in this area would be useful to better determine risk.

Strategies:

- Review existing information on the hydrogeology of the area.
- Coordination with the EPA, review any reports regarding this site as updates are available.

Superfund Site – McGaffey & Main Ground Water Plume	
Vulnerability Scores:	5
Wells & Zones Affected:	• City Wells #12 (Zones C & D) & #13 (zone D)
Contaminants of Concern	• Trichloroethylene (TCE) & perchloroethylene (PCE/PERC)

Issues:

- 550-acre groundwater plume at the former site of several dry cleaners operated from 1956-1963. These operations contaminated groundwater with tetrachloroethylene (PCE) and trichloroethene (TCE).
- 2017 NMED review of the site found the groundwater plume has expanded since the 2008 Record of Decision with the leading edge expanding approximately 2,200 feet further to the southeast of the dry-cleaning area.

Plume extent:
Tetrachloroethene (PCE) detections of over 10,000 micrograms per liter have been detected in several monitoring wells near the site that was the location of three former dry cleaners. The PCE plume extends over two miles to the southeast with detections over the MCL detected at 1.75 miles from the source. From 2008 to 2013 the edge of the plume migrated about 2200 feet. Other contaminants of concern include Trichloroethene (TCE), cis-1,2-dichloroethene, trans-1,2-dichoroethene, and vinyl chloride.

Current remediation efforts:
To mitigate the high soil vapor concentrations from posing a risk, a vapor intrusion mitigation system and enhanced soil vapor extraction system were installed at the source area. Currently, ground water remediation has not been implemented. NMED had completed the design and initial construction phases to treat the ground water plume hotspot area, however unforeseen field conditions at the site will require further evaluation of the plan.

Concerns:

- Potential source water (lower aquifer) contamination from existing contamination already in the upper aquifer.
- Expanding contamination plume.
- More understanding of hydrogeology in area needed to determine connection between upper and lower aquifer.

Future actions:
An addendum to the 5-year plan is in the final stages of development and should be released soon. It may contain information regarding future actions.

Strategies:

- Review existing information on the hydrogeology of the area.
- The City is cooperating with EPA and will continue to be involved in the remediation process as it goes forward. The city will review any reports regarding this site as updates are available.

7.2 Issues of Concern - POTENTIAL Sources of Contamination (PSOCs) - Vulnerability Scores above 1

Petroleum - Above Ground Storage Tanks (AST)	
Vulnerability Scores:	1.0 – 1.5
Wells & Zones Affected:	• City Wells # 10, 11, 18 (all zone D) • Riac Wells #3, 4, 5 (all zone D)
Contaminants of Concern	• Petroleum hydrocarbons • Volatile organic compounds such as benzene and synthetic organic compounds such as ethylene dibromide (EDB)

Concerns:

- Potential for leaking & contaminating groundwater of upper or lower aquifer.
- The wells listed above all have 2 or more ASTs. Riac #3 has 5 ASTs and Riac #1 & 4 each have 6 ASTs. The greater the number of tanks, the greater the probability of contamination occurring, putting those wells at increased risk.

Strategies:

- Periodic review of the New Mexico EnviroMap to check for new tanks.
- Land use controls such as setbacks to supply wells

Petroleum – Underground Storage Tanks (UST)	
Vulnerability Scores:	1.6 – 2.4
Wells & Zones Affected:	• City Wells #12, 13, 15, 16, 17 (all zone D)
Contaminants of Concern	• Petroleum hydrocarbons • Volatile organic compounds such as benzene and synthetic organic compounds such as ethylene dibromide (EDB)

Concerns:

- Have the potential to become leaky underground storage tank sites and contaminate groundwater in upper or lower aquifer.
- The wells listed above all have 2 or more USTs. Count: City Wells #12 (5), #13 (6), #15 (4), #16 (2), #17 (2). The greater the number of tanks, the greater the probability of contamination occurring, putting those wells at increased risk.

Strategies:

- Periodic review of the New Mexico EnviroMap to look for new tanks.
- Land use controls such as setbacks to supply wells.

Private Wells	
Vulnerability Scores:	1.2 – 2.0
Wells & Zones Affected:	• City Wells # 10, 11, 13, 15, 16, 17, 18 (all zone D) • Riac Wells #1, 3, 4, 5 (all zone D)
Contaminants of Concern	• Any number of organic or inorganic contamination from land use activities near well

Concerns:

- Other wells – particularly unregulated private wells - can be possible conduits for contamination from the surface to reach groundwater. Though most private wells will tend to be located within the upper and not lower aquifer, this should be confirmed.
- There are a large number of private wells identified in the above source water protection zones. Within the source water areas of the City Wells there are 1,046 private wells. Within the source water areas of the Riac Wells there are 321 private wells.

  The greater the number of private wells, the greater the probability of contamination occurring, putting other private wells as well as the City's wells at increased risk.

Strategies:

- Coordination with the local New Mexico Office of the State Engineer to ensure abandoned wells are properly plugged.

Septic Systems	
Vulnerability Scores:	1.2 – 3.0
Wells & Zones Affected:	• City Wells # 10, 11 (zones C & D), 13, 15, 16, 17, 18 (all zone D except where noted) • Kerr Wells #1, & #4 (both zone D) • Riac Wells #1, 4, 5 (all zone D)
Contaminants of Concern	• Septage, pathogens, nitrate, ammonia, chloride, heavy metals, household pesticides, herbicides, cleaning agents / solvents, fuels

Concerns:

- Improperly maintained and/or leaking septic systems leading to potential contamination of source water in upper or lower aquifers.
- Each of the source water areas cited above have multiple septic systems. Within the City Well source water areas there are an estimated 598 septic systems; the highest numbers occur within City Wells # 10 (234) & #11 (229). Riac Well #1 also has an estimated 256 septics. Other City, Kerr, and Riac wells have roughly 50 or fewer within a source water zone.

  The greater the number of septic systems, the greater the probability of contamination occurring, putting those City wells at increased risk.

Strategies:

- Public outreach and coordination with the local New Mexico Environmental Health Bureau Office to provide information to septic system users in the SWPA regarding septic systems.
- Water conservation incentives.

7.3 Issues of Concern - POTENTIAL Sources of Contamination (PSOCs) - Vulnerability Scores below 1

Auto Salvage Yards	
Vulnerability Scores:	0.4 - 0.8
Wells & Zones Affected:	• City Well # 10 (zone C) , #11 (zone D)
Contaminants of Concern	• Fuel: gasoline, diesel • vehicular fluids: transmission, power steering, brake, oil • solvents • heavy metals • acids
Concerns: • Have potential to leach contaminants into soil and groundwater	
Strategies: • Develop relationship with local auto salvage yard owners and encourage proper control of inventory and use of best management practices	

Oil and Gas Wells, plugged	
Vulnerability Scores:	0.5
Wells & Zones Affected:	• Riac #1, 3, 4 (zone D) • Kerr #1, 2, 3 (zone D)
Contaminants of Concern	• Oil, gas, brine water, methane
Concerns: • Potential for pathway of oil, gas, or brine-laded water to contaminate groundwater supplies	
Strategies: • Gather more information on well condition – Were they properly plugged? What is their depth?	

Agricultural Fields	
Vulnerability Scores:	0.3
Wells & Zones Affected:	• City Well #12, 13, 15 (zone D), 17, 18 (zone D) * • Riac Well #4 (zone D) • Trigg Well #1, 2 (zone D) *Note: In the 2018 Assessment, an Agricultural field was erroneously identified in City Well #16 zone A. There is a city park/ballfields and open space in zone A.
Contaminants of Concern	• nitrates, amonia, chloride, fertilizers, pesticides, herbicides
Concerns: • Potential for groundwater contamination from agricultural activities; particularly from excessive or improper use or storage (fertilizer or pesticide application, manure piles, ponding, etc.)	
Strategies: • Build and maintain communication with landowners regarding importance of groundwater protection. • Promote and encourage best management practices for agriculture.	

Arroyos	
Vulnerability Scores:	0.2 – 0.6
Wells & Zones Affected:	• City Well # 10, 11 (zones C & D), 13, 15, 17 (zone D), 18 (zones C & D) • Trigg Well #1, 2 (zone D)
Contaminants of Concern	• Various – depending on activity contributing to contamination
Concerns: • Arroyos channel surface water runoff and can be conduits for contaminants to mobilize from one location to another. There is a possibility of contaminant concentration with increased distance downstream as surface water runoff picks up and accumulates contamination from multiple locations (example: oil from multiple roadways draining to a single arroyo). • Arroyos are often areas of concentrated and extensive illegal dumping, the contents of which can contain a wide range of contaminants including oils, acids, and heavy metals. • Contaminants can infiltrate from the bed of an unlined arroyo into the groundwater.	

Strategies:

- Managing stormwater runoff to reduce contamination carried to arroyos.
- Managing illegal dumping in or around arroyos through municipal solid waste programs and public education.

7.4 Issues of Concern – Other

Voluntary Remediation Sites identified in 2018 Source Water Assessment

Three Voluntary Remediation Sites were identified in the 2018 City of Roswell Source Water Assessment completed in May 2018. These are sites where contamination exists under one of two conditions: 1) contamination originated from an off-site source and migrated to the site or 2) contamination originated on the site. In either case, the current property owner(s) want to develop the property and have chosen to participate in the NMED Ground Water Quality Bureau's Voluntary Remediation Program (VRP). Program participants work with the NMED to develop terms of agreement to reach mitigation of the contamination to the satisfaction of NMED. Successfully mitigated sites will receive a certificate of completion from NMED. VRP sites are media specific and may or may not be concerned with groundwater contamination. This will vary between individual sites.

Voluntary Remediation Site – CAP XXX Main & McGaffey (former Safeway)
(City Well #13, Zone D)

This site represents a voluntary remediation redevelopment project on property affected by a perchloroethylene groundwater plume that migrated from the Main and McGaffey Superfund. Though it appears in the SOC inventory as a separate site, is it not a source of contamination. As required under the NMED VRP, CAP XXX-Main/McGaffey, LLC conducted a Tier I Risk Assessment of the site. The assessment shows that contamination present on the site migrated from an off-site source, and sufficient mitigation through institutional controls prevent risk of contamination to future populations (CAP XXX-Main/McGaffey, 2004).

This site was developed with residential properties until about 1954. A Safeway Supermarket occupied the site from then until about 1980 and was unoccupied until development of a Walgreens in 2004.

The CAP XXX Main & McGaffey site has been deemed complete by the NMED-VRP in 2004.

Voluntary Remediation Site – Kmart Store #7017
(City Wells #12 & 13, Zone D)

This site had two underground storage tanks successfully removed in 1989. Soil sample testing in 2015 for contaminants of concern resulted in either no detected concentrations or concentrations below the NMED 2015 risk-based screening levels (Hunter/NMED, 2017). A temporary groundwater monitoring well was installed on the northeast portion of the site. Concentrations of PCE were detected at 0.0026 mg/L below the NM groundwater standards and toluene was detected at 0.0011 mg/L. The contaminants are likely from the McGaffey & Main PCE plume and not an on-site source.

The Kmart Store #7017 site has been deemed complete by the NMED VRP in 2017.

Voluntary Remediation Site – Starlight Drive-in Theater
(City Well #12, Zone D)

This property is also located within the boundary of the McGaffey & Main Superfund plume and contamination from PCE is determined to be from this off-site source.

8 Source Water Action Items & Priorities

To most effectively protect a community's source of drinking water, source water protection planning should be integrated into a public water system's operations and culture. The City of Roswell is committed to ensuring a safe and sustainable supply of drinking water for both current and future customers and this Source Water Protection Plan is one tool that will be used to accomplish this goal. The source water protection partners have developed a prioritized list of specific actions to be undertaken.

The list presented in the following pages will be reviewed and updated on a regular basis.

Table 5 - Action Items for Source Water Protection

Item	Responsibility	Priority	Timeframe
1. Discuss the Source Water Protection Plan at one of the City's public forums in 2019, and at City Council Infrastructure Committee. They will work with the PIO office for a forum (4th Monday of every month Louis will take to infrastructure)	City	Med	Spring 2019
2. Obtain a hydrology study that will break down into zones and their potential susceptibility to contamination for all City water wells by the end of 2019. Define capture zones for wells to replace arbitrary fixed radius circles. - This should be done particularly for wells at higher risk (city wells 10-15 & Riac wells 1-4)	City	High	By end of 2019
3. Develop greater understanding of hydrogeology in Roswell's wellfield area - particularly the relationship between the upper and lower aquifers in areas of high risk wells. Develop definition of zones and development restrictions based on hydrology study and interaction with NMED, by end of 2019.	City	High	By end of 2019
4. Develop City zoning ordinances to protect and safeguard all City water wells and wellfields within the City limits.	City	Med	By end of 2019
5. Propose an ordinance restricting new wells within the City to the City Council Infrastructure Committee by the end of 2019.	City	Med	By end of 2019
6. Develop zoning ordinances with the Chaves County and the ETZ to protect and safeguard all City water wells and wellfields outside of the City limits.	City	Med	2020

7. City to develop new GIS map combining the newly defined source water protection areas based on hydrology study and the city zoning	City	Low	2021
8. Set up committee or work group responsible for executing the plan, have a progress report due to the governing body annually -- city council infrastructure committee on January of each year	Engineering and water utility	Med	annual
9. Review Source Water Protection Plan and Assessment every 2 years.	City and Source Water Committee	Med	ongoing
10. Continue mediation, remediation, and closure of un-needed monitoring wells at the previous Walker Air Force Base.	City	Med	ongoing
11. Protection from known existing contamination (Walker AFB, LUST sites, Superfund sites) - outline what is happening now and what will be actions going forward	City	Med	ongoing
12. Encourage city residents to use city water instead of private wells through education and outreach opportunities.	City	Low	ongoing
13. Increase public education on source water protection. Develop specific objectives.	City	Low	ongoing
End of action items list			

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